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MEDICO-MECHANICAL TREATMENT

By HELEN A. PARKS

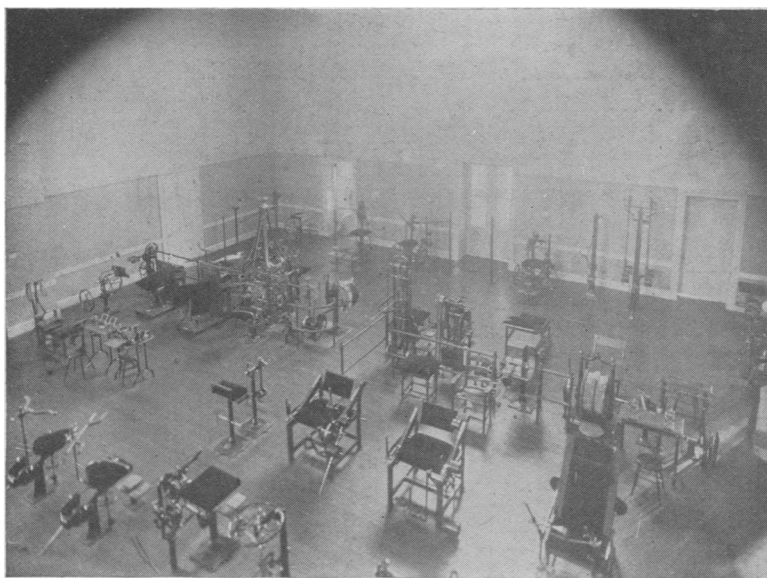
Class of 1910, Massachusetts General Hospital

THE Zander methods of treatment are the modern applications to diseased bodies of the same principles by which the ancient Greeks strove to perfect their healthy physical development through the Olympic games and various other athletic sports. That exercise strengthens weak muscles has long been known, and even in those early times the value of physical exercise for the relief of diseased conditions was slightly recognized. The gymnastics were not modified to meet the needs of the patients, however, and consequently were as often harmful as beneficial.

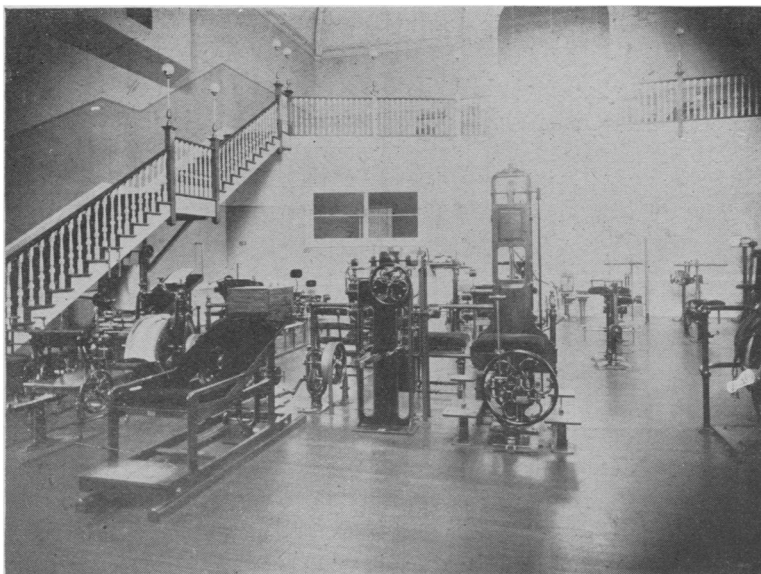
Indeed, no notable attempt to systematize or modify physical exercise, with relation to its value in pathological conditions, was made until late in the eighteenth century. Ling, the Swedish gymnast, first described a complete system of exercises which were suitable for diseases of the muscles and nerves. Later on, physical exercise as a means of relieving cardiac and respiratory diseases was much studied, and proved to be valuable in certain conditions. The great difficulty encountered was the fact that there was no adequate method of graduating and modifying the exercises finely enough to meet the varying needs of individuals.

A German physician, Oertel, recommended mountain-climbing under rigid supervision, as a treatment of heart and lung troubles. His plan was to lay out walks of a length and steepness suited to the individual need, and by careful observation and supervision of the patient, to vary the climb according to indications. He met with such brilliant success in many instances that attempts were made to carry out his methods in several places in Europe. Where the supervision was inadequate the results were so harmful that mountain-climbing as a curative treatment became much less popular.

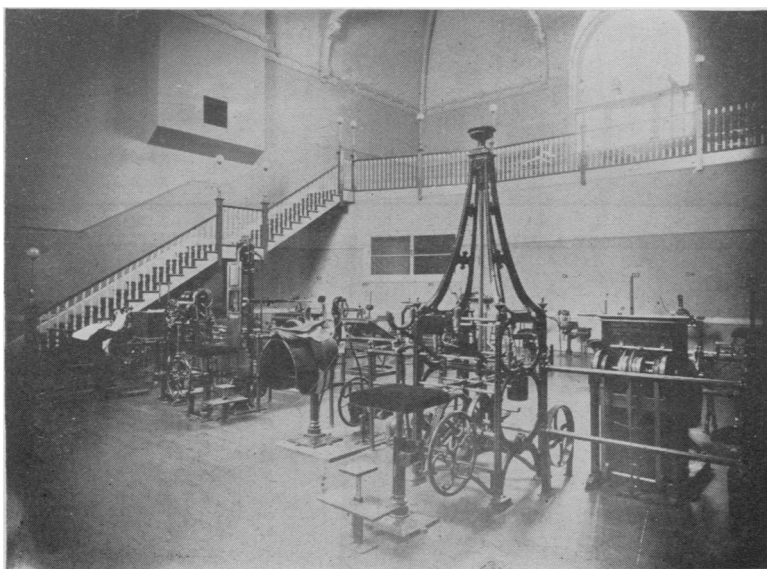
In 1857 Gustav Zander was physical director of a large girls' school in Sweden where the system in use was a modification of that taught by Ling years before. The exercises consisted of a series of active and passive movements where the results depended almost wholly upon the personal observation and judgment of the gymnast. The amount of strength used by the patient was measured only by the amount of



MECHANOTHERAPY APPARATUS, MASSACHUSETTS GENERAL HOSPITAL, BOSTON.



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resistive force required of the gymnast himself, and as he became used to controlling resistive movements his own strength increased so as to eventually render him unable to judge or note slight changes in his patient's condition.

Zander was very much impressed by the difficulty with which he adapted his strength to that of his more delicate pupils, and it was then that he first thought of using a mechanical means for overcoming this inconvenience. His ambition was to perfect an apparatus, the action and resistance of which could be controlled to suit individual needs more accurately and consistently than could be done by relying on the sensitiveness of human muscles.

Throughout his medical studies, Zander worked upon this problem and finally succeeded in convincing his friends of the value of his scheme. In 1864 he received their support in founding an Institution of Mechaniotherapy, in Stockholm. It was opened in January, 1865, with twenty-seven pieces of apparatus. In speaking of his institution, Dr. Zander said, "The healing principle lies in part in exercising the muscles, and in part in certain mechanical operations upon special organs or parts of the body."

By the Zander methods the gymnasts are replaced by mechanical structures so arranged that in active movements the patient is forced to use certain muscles or groups of muscles to set the machine in motion. Various machines are adapted to the action of various parts of the body—stretching, bending, or turning—as is required. In passive movements the machines are moved by gasoline or steam power.

A great advantage is that the action of a machine can be accurately determined and graded according to indications. For instance, a machine which exercises certain muscles may be set at a given resistance which the patient can overcome with reasonable effort. After exercising for a time the resistance can be increased at a measured rate, as indicated by the patient's condition.

By this means, the effect of one-sided or sedentary occupations can be overcome by applying the treatments to the habitually unused muscles.

Several pieces of the Zander apparatus are devoted to exercises for the correction of scoliosis,¹ and in this particular line the treatments are very successful.

Many of the machines give the effect of massaging the various parts

¹ [For the benefit of the older graduates who, like the editors, are not so well versed in scientific terms as are the pupils in training, we explain that scoliosis means curvature of the spine.—ED.]

of the body to which they are adapted. This is usually accomplished by means of plush or chamois-covered wheels and corrugated straps which revolve against the skin.

There are various kinds of vibrators which give well-defined psychological as well as physiological effects, leaving nerve patients soothed and refreshed, relieving pain and oftentimes very evidently lowering the rate of the pulse and strengthening it. Milder muscular exercises are used in circulatory disturbances with a view to raising blood-pressure by a mechanical action on the arteries. Machines for chest expansion and breathing exercises are among those most used and most efficient.

It would be impossible to describe or even name the different types of apparatus in a short article, as modifications and improvements are constantly being added to the original machines used by Zander. The results obtained by his methods are recognized throughout the medical world, and a Zander Room more or less complete in equipment is becoming a necessary department of all the larger hospitals. The use and value of that apparatus is taught in the medical schools under the subject mechanicotherapeutics.

NURSING CARE OF THE INSANE

By MARGARET PURCELL

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THE article by Dr. W. Mabon in the August JOURNAL was undoubtedly read with great interest by nurses who are caring for the insane.

I will not undertake to discriminate between the general and the mental nurse, as little can be added to what Dr. Mabon has already said, but that the average general nurse takes her method of mental nursing from one of our best text-books on general nursing is very evident. This text-book is above criticism, and I deem it invaluable in its directions as to the care of the sick except that it speaks of insanity as madness, adding the direction, "Treat the patient with great sternness."

I have been caring for nervous and mental cases for several years, and find that in no form of nervous breakdown does a patient respond more quickly to kindness and gentleness than do the insane. The most violent, and even homicidal cases, can in time be made much more comfortable and manageable by such means. The patient is noisy, violent, possibly profane,—a suggestion or kind word from the nurse, in a